

CLAIMS

What is claimed is:

1. An air conditioning system for a vehicle comprising a first drive source, wherein the air conditioning system comprises:

at least one compressor comprising a second drive source, wherein the at least one compressor is driven by the first drive source or the second drive source, or a combination thereof, and the second drive source comprises an electrical power supply;

means for selecting at least one of the first drive source and the second drive source for driving the at least one compressor;

means for detecting an amount of electrical power consumed by the second drive source; and

means for controlling a rotational speed of the second drive source, wherein when at least one predetermined condition is satisfied and the amount of electrical power consumed by the second drive source is greater than a first limit for the amount of electrical power which the second drive source may consume, the first limit increases to a second limit.

2. The air conditioning system of claim 1, wherein the means for controlling reduces the rotational speed of the second drive source before the first limit increases to the second limit.

3. The air conditioning system of claim 1, wherein the at least one compressor further comprises:  
a first compression mechanism driven by the first drive source; and  
a second compression mechanism driven by the second drive source.

4. The air conditioning system of claim 1, wherein the air conditioning system further comprises a refrigeration system, and the at least one predetermined condition is satisfied when a load of the refrigeration system is greater than a predetermined load.

5. The air conditioning system of claim 4, wherein the load of the refrigeration system is greater than the predetermined load when an amount of ambient light is greater than a predetermined amount of ambient light.

6. The air conditioning system of claim 4, wherein the load of the refrigeration system is greater than the predetermined load when a temperature of air outside the vehicle is greater than a predetermined

outside air temperature.

7. The air conditioning system of claim 4, wherein the load of the refrigeration system is greater than the predetermined load when a temperature of air inside the vehicle is greater than a predetermined inside air temperature.

8. The air conditioning system of claim 4, wherein the load of the refrigeration system is greater than the predetermined load when a speed of the vehicle is greater than a predetermined vehicle speed.

9. The air conditioning system of claim 1, wherein the at least one predetermined condition is satisfied when an amount of electric power stored in the electric power supply is greater than or equal to a predetermined amount of stored electric power.

10. The air conditioning system of claim 1, wherein the at least one predetermined condition is satisfied when the vehicle is operating in an idle-stop mode and an amount of ambient light is greater than a predetermined amount of ambient light.

11. The air conditioning system of claim 1, wherein the at least one predetermined condition is satisfied when the vehicle is operating in an idle-stop mode and a temperature of air outside the vehicle is greater than a predetermined outside air temperature.

12. The air conditioning system of claim 1, wherein the air conditioning system further comprises a refrigeration system, and the at least one predetermined condition is satisfied when a load of the refrigeration system is greater than or equal to a predetermined load or when an amount of electric power stored in the electric power supply is greater than or equal to a predetermined amount of stored electric power.

13. The air conditioning system of claim 12, wherein the load of the refrigeration system is greater than the predetermined load when an amount of ambient light is greater than a predetermined amount of ambient light.

14. The air conditioning system of claim 12, wherein the load of the refrigeration system is greater than the predetermined load when a temperature of air outside the vehicle is greater than a predetermined outside air temperature.

15. The air conditioning system of claim 12, wherein the load of the refrigeration system is greater

than the predetermined load when a temperature of air inside the vehicle is greater than a predetermined inside air temperature.

16. The air conditioning system of claim 12, wherein the load of the refrigeration system is greater than the predetermined load when a speed of the vehicle is greater than a predetermined vehicle speed.

17. The air conditioning system of claim 12, wherein the predetermined amount of stored electric power is about equal to a maximum amount of electrical power which the electrical power supply may store.

18. The air conditioning system of claim 1, wherein the at least one predetermined condition is satisfied when an amount of electrical power consumed by at least one element of the air conditioning system other than the at least one compressor is less than a predetermined amount of consumed electrical power.

19. The air conditioning system of claim 18, wherein the at least one element of the air conditioning system other than the at least one compressor comprises:

a blower for sending air into an interior of the vehicle; and

a cooling fan for cooling a condenser of the air conditioning system.

20. The air conditioning system of claim 1, wherein the first drive source comprises an engine, the second drive source comprises an electric motor, and the electric power supply comprises a battery.

21. A vehicle comprising:

a first drive source; and

an air conditioning system, wherein the air conditioning system comprises:

at least one compressor comprising a second drive source, wherein the at least one compressor is driven by the first drive source or the second drive source, or a combination thereof, and the second drive source comprises an electrical power supply;

means for selecting at least one of the first drive source and the second drive source for driving the at least one compressor;

means for detecting an amount of electrical power consumed by the second drive source;

and

means for controlling a rotational speed of the second drive source, wherein when at least one predetermined condition is satisfied and the amount of electrical power consumed by the second drive source is greater than a first limit for the amount of electrical power which the second drive source may consume, the first limit increases to a second limit.

22. The air conditioning system of claim 21, wherein the means for controlling reduces the rotational speed of the second drive source before the first limit increases to the second limit.

23. The vehicle of claim 21, wherein the air conditioning system further comprises a refrigeration system, and the at least one predetermined condition is satisfied when a load of the refrigeration system is greater than a predetermined load.

24. The vehicle of claim 21, wherein the at least one predetermined condition is satisfied when an amount of electric power stored in the electric power supply is greater than or equal to a predetermined amount of stored electric power.

25. The vehicle of claim 21, wherein the air conditioning system further comprises a refrigeration system, and the at least one predetermined condition is satisfied when a load of the refrigeration system is greater than or equal to a predetermined load or when an amount of electric power stored in the electric power supply is greater than or equal to a predetermined amount of stored electric power.

26. The vehicle of claim 21, wherein the at least one predetermined condition is satisfied when an amount of electrical power consumed by at least one element of the air conditioning system other than the at least one compressor is less than a predetermined amount of consumed electrical power.

27. An air conditioning system for a vehicle comprising a first drive source, wherein the air conditioning system comprises:

at least one compressor comprising a second drive source, wherein the at least one compressor is driven by the first drive source or the second drive source, or a combination thereof, and the second drive source comprises an electrical power supply;

means for selecting at least one of the first drive source and the second drive source for driving the at least one compressor;

means for detecting an amount of electrical power consumed by the second drive source; and

means for controlling a rotational speed of the second drive source, such that when the amount of electrical power consumed by the second drive source is greater than a first limit for the amount of electrical power which the second drive source may consume, the means for controlling reduces the rotational speed of the second drive source, and when at least one predetermined condition is satisfied, the first limit for the amount of electrical power which the second drive source may consume increases to a second limit.